

# *Stachys cretica*, a new host plant for *Carcharodus orientalis* REVERDIN, 1913 on the Greek island of Samos (Lepidoptera: Hesperiiidae)<sup>1</sup>

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**Abstract:** *Stachys cretica* L. (Cretan Hedgenettle, Lamiaceae) was confirmed as a new natural host plant for *Carcharodus orientalis* REVERDIN, 1913 (Oriental Marbled Skipper) on the island of Samos (Aegean Sea, Greece).

**Keywords:** Butterflies, ecology, Greece.

***Stachys cretica*, eine neue Raupen-Nahrungspflanze von *Carcharodus orientalis* REVERDIN, 1913 auf der Insel Samos (Lepidoptera: Hesperiiidae)**

**Zusammenfassung:** Auf der griechischen Ägäisinsel Samos wurden Präimaginalstadien von *Carcharodus orientalis* REVERDIN, 1913 an *Stachys cretica* L. (Lamiaceae) gefunden. Dabei handelt es sich um eine neue Freilandnahrungspflanze dieses Dickkopffalters.

## Introduction

The range of the Oriental Marbled Skipper *Carcharodus orientalis* REVERDIN, 1913 reaches from the Balkan Peninsula through Turkey, southern Ukraine and the Levant to the Caucasus and Iran. *C. orientalis* was first described by REVERDIN (1913) based on specimens which had been collected on the Peloponnesos (Greece) by M. NEUSCHILD (Berlin). In Greece, *C. orientalis* is widely distributed both on the mainland and also on many islands in the Aegean Sea (e.g. Limnos, Samos, Skyros, Andros, Lesbos, Naxos and Kythira). It flies from sea level up to 2200 m a.s.l. (PAMPERIS 2009). This species is closely related to *C. floccifera*; they can only be differentiated by their genitalia (compare DINCA et al. 2010). *C. orientalis* seems to be fairly variable especially with respect to colouring (DEVYATKIN 1992, HESSELBARTH et al. 1995).

Until a few years ago, the ecology of *C. orientalis* was very poorly understood. First information on the host plants of this species was provided by BENYAMINI (2001–2002 and personal communication): *Marrubium vulgare* in Jordan. The first detailed data on the ecology of *C. orientalis* were published by LAFRANCHIS (2003), gathering observations on habitats, behaviour and other aspects of the ecology from Greece and providing photographs of the first instars. The list consists of 6 species of host plants from the genera *Ballota* (2), *Marrubium* (2) and *Stachys* (2) (all Lamiaceae): *S. germanica*, *S. iva*. W. WAGNER (2009) discovered a third species of the genus *Marrubium* as host plant in northern Greece in 2008. Recently, *Acinos arvensis* (also Lamiaceae) has also been confirmed as a host plant in the northern Caucasus by V. TIKHONOV (2011). These data are very valuable as they are based on

field observations. The overall host plant list is already longer than for most other *Carcharodus* species (if only confirmed natural host plants are counted). Since none had bred the first instars of *C. orientalis* before 2003 or confused the species with its relatives, the literature here is not blurred by erroneous food plants as it is the case with other *Carcharodus* species (compare TOLMAN & LEWINGTON 1997).

Based on this list of host plants it could be assumed that more field research might reveal additional host plants of *C. orientalis*. The aim of this contribution is to report the results of a search on the Greek island of Samos.

## Material and methods

During a Swiss entomological excursion to the island of Samos (1.–7. iv. 2010), the author planned to search for *C. orientalis* in the Ambelos mountains north of Pandrosos (central part of Samos, 750–920 m a.s.l.). Since it was presumably too early in the year to find imagines of this species on the wing in the mountainous areas of the island, the main focus was on the preimaginal instars. Equipped with a map provided by L. PAMPERIS indicating a locality of *C. orientalis*, some basic knowledge of the species' ecology from the literature and own observations in the Taygetos mountains in 2009 (ALBRECHT, unpublished) suitable habitats were searched through, mainly pastures with low vegetation, at altitudes from 800 to 950 m a.s.l.

## Results

A potential host plant with reasonable prevalence was soon discovered in form of a *Stachys* species (Fig. 2). Unfortunately, despite considerable efforts over several days, neither *C. orientalis* caterpillars nor any of its typical “tents” or foraging damage were found. Finally, on the afternoon of 6. iv., one caterpillar and one pupa were detected by Peter SONDEREGGER.

Both specimens were found 600–700 m north of the small village of Pandrosos at altitudes of 820 and 790 m. They were hidden in “tents” consisting of several leaves spun together as is usual for Hesperiiidae. The caterpillar was found on a plant growing at the edge of a small, nowadays probably abandoned, road (Fig. 1) while the pupa was discovered on a small pasture in the shrubland (Figs. 3, 4).

<sup>1</sup> First contribution to the knowledge of the genus *Carcharodus*.



**Fig. 1:** Location of the *Carcharodus orientalis* caterpillar. The larva was detected on a specimen of *Stachys cretica* (arrow). Samos, north of Pandrosos, 820 m, 6. iv. 2010. **Fig. 2:** *Stachys cretica* in early spring. Samos, Ambelos mountains, 900 m, 3. iv. 2010. **Fig. 3:** Fully grown caterpillar of *C. orientalis* on *Stachys cretica* ("tent" opened). Samos, north of Pandrosos, 820 m, 6. iv. 2010. **Fig. 4:** "Tent" with hidden pupa of *C. orientalis* on *Stachys cretica* (arrow). Samos, north of Pandrosos, 790 m, 6. iv. 2010. **Fig. 5:** *C. orientalis* ♂ (e.p. 24. iv. 2010) reared from the pupa found north of Pandrosos on 6. iv. 2010.

Since the plant was not flowering at the time, it initially had to remain unidentified. One plant was dug out and potted. A photograph of the flowering plant was later identified as *Stachys cretica* by Tristan LAFRANCHIS.

The identification of *C. orientalis* was confirmed when 2 ♂♂ hatched on 24. iv. and 4. v. 2010. They were darker in colouration than specimens from mainland Greece (compare ALBRECHT 2012). The specimens are preserved in the author's collection (Fig. 5).

## Discussion

Due to the relatively long list of host plants, which contains the genera *Marrubium*, *Stachys*, *Ballota* and *Acinos*, it was likely that more plants are suitable for *C. orientalis*. This was confirmed by the discoveries of the caterpillar and the pupa on *S. cretica*. According to LAFRANCHIS & SIFKAS (2009) this plant is widely distributed in central and southern Greece, Crete and on the Aegean islands. The genus *Stachys* is present with 52 spe-

cies in Greece, 30% of which are endemic (LAFRANCHIS & SIFKAS 2009).

Additional fieldwork on the Balkan Peninsula, in Turkey and the Middle East will presumably reveal more host plants for the Oriental Marbled Skipper. *C. orientalis* is obviously relatively flexible in choosing its host plants although regionally different preferences may exist (which remain to be detected). Not surprisingly, when reared, the caterpillar of *C. orientalis* accepts additional plants (compare WAGNER 2011) which are not mentioned here in detail in order to avoid introducing false "host plants" into the literature.

*C. orientalis* hibernates as a half-grown caterpillar (LAFRANCHIS 2003), which apparently grows quite rapidly in spring. This assumption is corroborated by the fact that the vegetation and also the butterfly fauna (e.g. *Allancastris cerisy* GODART, 1824 and *Archon apollinus* HERBST, 1798, both Papilionidae) at middle and higher elevations on Samos still showed clearly a spring aspect when the caterpillar and pupa were found.

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## References

- ALBRECHT, M. (2012): *Carcharodus orientalis* REVERDIN, 1913 (Oriental Marbled Skipper). — URL: [www.carcharodus.ch/orientalis\\_e.html](http://www.carcharodus.ch/orientalis_e.html) (last accessed: 5. II. 2012).
- BENYAMINI, D. (2001–2002): The butterflies of Dana Reserve, Edom, Jordan (Lepidoptera: Papilionoidea et Hesperioidea). — *Linneana belgica*, Bruxelles, 18 (2): 95–102, (6): 265–272, (7): 351–360.
- DEVYATKIN, A. L. (1992): Review of skippers of the genus *Carcharodus* HBN. (Lepidoptera, Hesperidae) of the USSR. — *Entomological Review*, St. Petersburg, 70 (7): 82–98. [Original version in Russian in *Entomologicheskoye Obozreniye*, St. Petersburg, 69 (4): 925–940 (1990).]
- DINCA, V., ZAKHAROV, E. V., HEBERT, P. D. N., & VILA, R. (2010): Complete DNA barcode reference library for a country's butterfly fauna reveals high performance for temperate Europe. — *Proceedings of the Royal Society B*, London, 278 (1704): 347–355 (doi: 10.1098/rspb.2010.1089).
- HESELBARTH, G., VAN OORSCHOT, H., & WAGENER, S. (1995): Die Tagfalter der Türkei unter Berücksichtigung der angrenzenden Länder. Band 1. Allgemeiner Teil. Spezieller Teil: Hesperidae, Papilionidae, Pieridae, Lycaenidae. — Bocholt (S. Wagoner), 754 pp.
- LAFRANCHIS, T. (2003): Biologie, écologie et répartition de *Carcharodus orientalis* (REVERDIN, 1913) en Grèce. Comparaison avec *Carcharodus flocciferus* (ZELLER, 1847) (Lepidoptera, Hesperidae). — *Linneana belgica*, Bruxelles, 19 (3): 140–146.
- , & SIFKAS, G. (2009): *Flowers of Greece*. 2 vols. — Paris (Diatheo), 431 + 445 pp.
- PAMPERIS, L. (2009): The butterflies of Greece. Second edition, revised and enlarged. — Lárissa (Editions Pamperis), 766 pp.
- REVERDIN, J.-L. (1913): Deux espèces méconnues du genre *Carcharodus*. — *Bulletin de la Société lépidopterologique de Genève*, Genève, 2 (4): 225–237.
- TIKHONOV, V. (2011): *Carcharodus orientalis* REVERDIN, 1913 — Тоако-головака восточная. — URL: [www.babochki-kavkaza.ru/index.php?option=com\\_content&view=article&id=72:-carcharodus-orientalis&catid=4:carcharodus-orientalis&Itemid=28](http://www.babochki-kavkaza.ru/index.php?option=com_content&view=article&id=72:-carcharodus-orientalis&catid=4:carcharodus-orientalis&Itemid=28) (last accessed: 3. II. 2012).
- TOLMAN, T., & LEWINGTON, R. (1997): *Butterflies of Britain & Europe*. — London etc. (HarperCollins), 320 pp., 104 pls.
- WAGNER, W. (2009): [Lepiforum:] Botanik: Lamiaceae aus Griechenland [and following contributions in this thread]. — URL: [www.lepiforum.de/cgi-bin/forum2007.pl?noframes;read=53450](http://www.lepiforum.de/cgi-bin/forum2007.pl?noframes;read=53450) (last accessed: 3. II. 2012).
- (2011): Schmetterlinge und ihre Ökologie. *Carcharodus orientalis*. — URL: [www.pyrgus.de/Carcharodus\\_orientalis.html](http://www.pyrgus.de/Carcharodus_orientalis.html) (last accessed: 3. II. 2012).

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